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To Docket ORD@EPA
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Subject Docket ID No. EPA–HQ–ORD–2007– 0983

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Wilmington, DE 19898
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Office of Environmental Information (OEI) Docket
U. S. Environmental Protection Agency
Mailcode 2822T
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Docket ID No. EPA–HQ–ORD–2007– 0983

Dear Sir/Madam:

Re: The draft ‘‘2007 Interim Report of the U.S. EPA Global Change

Research Program Assessment of the Impacts of Global Change on Regional

U.S. Air Quality: A Preliminary Synthesis of Climate Change Impacts on O3’’

E.I. duPont de Nemours Inc. (DuPont) appreciates the opportunity to submit comments on the Environmental Protection Agency’s (EPA) report “Assessment of the Impacts of Global Change on Regional U.S. Air Quality: A Preliminary Synthesis of Climate Change Impacts on Ground-Level Ozone.”

DuPont supports health, safety and environmental protection policies that incorporate objective, realistic, comprehensive and scientifically balanced analyses. Chemical manufacturing results in emissions of volatile organic compounds (VOCs) and nitrogen oxide (NOx), both of which are precursors of ozone.

1. The report (pages xviii and xix) mentions that “to isolate the impacts of climate change, all model results discussed are for simulations that assumed no future changes in the anthropogenic emissions of precursor pollutants. Also, unless otherwise indicated, “future” refers to the time period around 2050”.

A. Future versions of this report should attempt to take into account some reduction of man-made precursor pollutants. This should be expected as many areas of the country will implement further measures to strive to meet the new 2008 ozone standard. Lower VOC and NOx emissions, in turn, should lower the range of potential ozone increases and make this less of an issue to be concerned about.

B. Since the attainment dates for the new ozone standard will range from 2013 - 2030, perhaps future model runs should evaluate the impact of climate change on ozone formation for the timeframe 2020 - 2030 instead of 2050. SIP's will be due in 2013 for the future range of attainment dates (2013 - 2030), thus adding fuel to arguments that it is premature to establish a "climate penalty" at this time.

Since there should be major anthropogenic NOX reductions by the time from what has been modeled and the ozone production gets more NOx dependent at lower NOX concentrations (based on isopleths of ozone chemistry)

the increases in ozone could be even more limited than currently projected. Studies in the last few years in the UC Riverside low NOx chamber have verified that ozone is NOx dependent at low NOx. Also, see attached graph made from the National Academy of Science Report and regraphed with NOx on the x axis and ozone on the Y axis and a copy of a page similar shown by Dr W. Carter of U of C Riverside on one of his study reports.

These would be better conveying to readers the nonlinear chemistry of ozone formation and how chemistry differs in different regions. SInce isoprene is a significant biogenic precursor, it would also be beneficial to graphically show the increased contribution of isoprene under projected climate conditions. Also, see attached report by Dr W. Carter on isoprene reactions.

Not only do we agree with recommendations in the Appendix for natural variances, anthropogenic changes should be considered: "C.2.2. Recommendations from the Biogenic and Fire Emissions Group (1) there is a need to develop algorithms that describe chemical emissions of major vegetative species' response to climate change for use in current and biogenic emission forecasting.

Changes in vegetative growth, yield, and water use have been the foci of research efforts to understand climate change impacts on natural and domestic woody and herbaceous vegetation. Basic research is needed to better understand the physiological impacts of climate change on vegetation chemical emissions. An improved knowledge of species-level response to climate change is needed before complete terrestrial emission budget cycle is possible. "

States must use projections of anthropogenic emissions for their SIPs---so EPA should also include scenarios of projected anthropogenic emissions in these studies.

2. Another key study would be to run projections with no(zero) anthropogenic emissions and compare with projected emissions including anthropogenic emissions.

3. EPA has made a good start in these model runs but should continue including using the latest detailed chemistry for at least a few runs to comapre with the simplified chemistry in these initial runs.

4. A data set representing actual meteorology is used to model ozone episodes which have already occurred. A great deal of effort is put into assuring that the model basis meteorology matches up with the actual meteorology. Trying to impose a future global warming change on an actual meteorological data set is not based on a peer reviewed process. Atmospheric temperature will not be the only change. Other changes will be sea surface temperature, cloud formation, solar radiation and albedo, the effects of these on winds, planetary boundary layer and change of temperature with elevation, fronts, rain events, land breeze/sea breeze changes and others. Right now what is done is a back trajectory or forward trajectory analysis comparing actual meteorological data sets to the model basis data sets to assure that the data sets represent as close to reality as possible. Nudging and other techniques are used to improve the performance of the modeled data set against the actual data set. Another problem is understanding how the weather changes and behaves at night. The current weather modeling does not compare well with actual meteorology at night.

5. EPA should have peer review of all modeling and analysis before a final report is issued.

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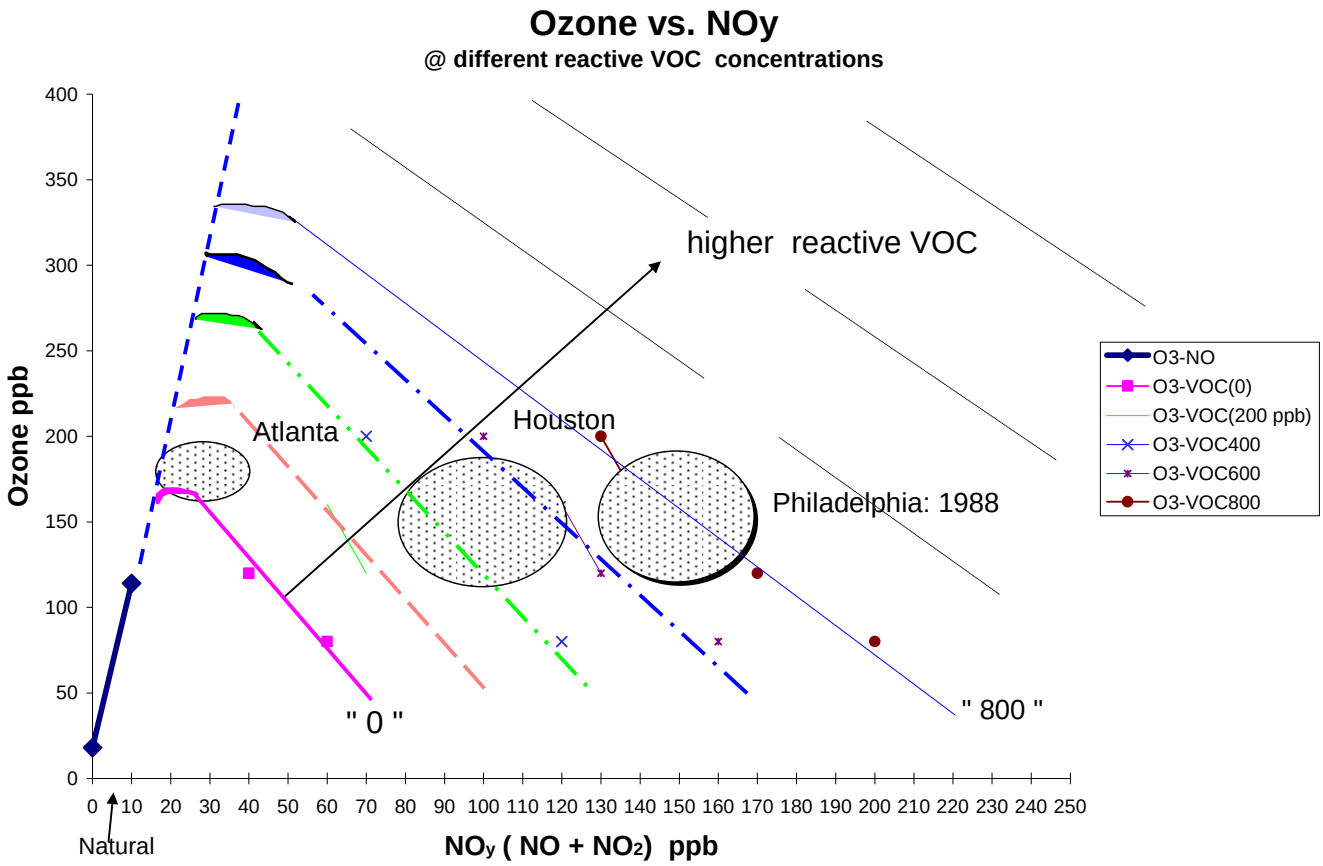
Attachment : Chart based on National Academy of Science Report



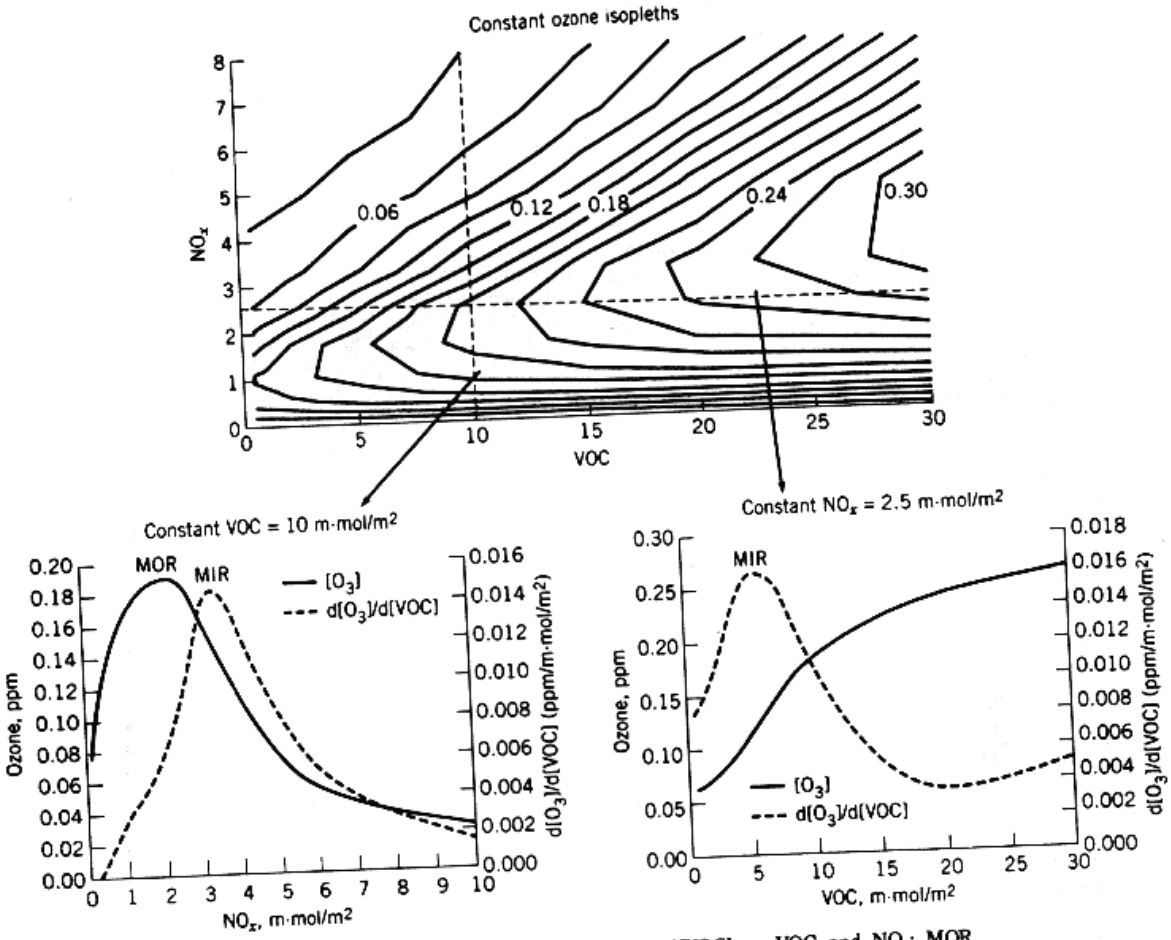


Figure 1. Dependences of peak ozone and d[O_3]/d[VOC] on VOC and NO_x; MOR, maximum ozone reactivity, also referred to as maximum ozone incremental reactivity (MOIR); MIR, maximum incremental reactivity. One day maximum ozone concentrations calculated in a one-day box model simulation using the "averaged conditions" scenario of (23) and the SAPRC-93 chemical mechanism.

reactivity (MIR) conditions, respectively. Discussed subsequently, this concept is useful for developing VOC reactivity scales.

From this analysis we see that NO_x conditions are a major factor determining the impact of VOC emissions on ozone. However, other conditions will also affect VOC reactivity, by affecting how rapidly NO_x is removed, by affecting overall radical levels (and thus how rapidly NO_x and VOCs react), and by affecting other factors determining the efficiency of ozone formation. This results in variations of VOC reactivities among different airshed conditions, even those with similar NO_x levels. These issues are discussed in more detail in a later section.

Air Quality Models

Air quality models, also called airshed models, are computerized representations of the atmospheric processes responsible for air pollution, which includes ozone formation. These models are essential to evaluating control strategies aimed at reducing pollution to meet air quality goals. Figure 2 is a schematic showing how air quality modeling is used for evaluation of control strategies. For pollutants that are emitted directly, such as carbon monoxide, the models are primarily useful for predicting how the pollutants are distributed once they are emitted, and how rapidly they disperse. If the pollutant is formed in the atmosphere rather than being emitted directly, as is the